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'Understanding volcanoes and society: the key for risk mitigation'



El Reventador volcano (Ecuador): non-stop activity since 2002

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El Reventador volcano, located in the Subandean Zone represents one of the most active volcanoes in Ecuador. The eruption originated by its reactivation on November 3rd of 2002 reached a VEI 4, the strongest eruption in this country in the last 125 years. The Instituto Geofísico (IG) of the Escuela Politécnica Nacional (EPN) monitors this volcano with a complete network distributed on the volcano. El Reventador's common volcanic products are gas-ash emissions, lava flows, pyroclastic density currents (PDC's) and lahars. Over the past 14 years of continuous activity the IG has provided many eruption alerts to the authorities and population. Based on the seismicity, thermal and visual images, MIROVA, VAAC, MODIS alerts and field work campaigns, we have identified four major eruptive phases: 1) 2002-2009. Explosive and effusive phase: copious PDC's only at the reactivation process and the generation of 17 lava flows (max length 4.5km); 2) 2009-2010. Explosive phase, a cinder cone was developed and some occasional small PDC's (max length 0.5 km) were detected; 3) 2011-2012. Effusive and explosive phase: lava dome grew up inside the cinder cone, occasional PDC's occurrence (max length 0.5 km); 4) 2012-2014. Effusive and explosive phase: >20 lava flows (max.length 1.7km) and the increasing generation of PDC's (max length 2 km). This changing eruptive style has lead to the accumulation of pyroclastic material in the crater left by the explosion during its reactivation. Nowadays the summit of the volcano has already surpassed the 3585 masl measured after the eruption in 2002. Since approximately 4 years the continuous accumulation of pyroclastic material in the summit has created instability of the material in the crater, which then easily generates PDC's with lengths reaching longer distances in time. This situation illustrates the necessity to create more accurate hazard maps related to new conditions of the volcano.